Amendments to the Claims

Please cancel claims 1, 4, 5, 11, 14, 15, 22, 23, 26, and 27. Please amend Claims 2, 3, 6-10, 12, 13, 16-20, 24, 25, and 28-32. Please add new Claims 33-52. The Claim Listing below will replace all prior versions of the claims in the application:

Claim Listing

1. (Canceled).

2. (Currently amended). A method as in claim [[1]] 7 wherein the steps of examining and routing the message are performed within a network layer thread as the message is first received by the network layer.

3. (Currently amended). A method as in claim [[1]] 7 wherein the steps of examining and routing the message are performed within a lower layer thread as the message is passed up to the network layer by the lower layer.

4. (Canceled).

5. (Canceled).

6. (Currently amended). A method as in claim [[5]] 7 additionally comprising the step of directly routing network layer messages that do not require acknowledgment.

7. (Currently amended). A method for processing network layer messages within a wireless communication system, the network layer including within it certain functional layers, including a radio resource function, a mobility management function, and a connection management function with at least the radio resource function being normally assumed to be a transport mechanism for the mobility management and connection management functions, the method comprising the steps of:

examining a network layer message traveling in an uplink direction from a mobile station towards network subsystem components to determine, prior to routing it to any functional layer, whether it is associated with connection management, mobility management, or radio resource management;

routing the message directly to the respective connection management, mobility management, or radio resource management functional layer, without passing the message through each of the functional layers; and

processing downlink network layer messages traveling in a downlink direction from network subsystem components towards the mobile station in a direct manner such that the network layer messages do not pass through other layer protocol stacks, ~~as in claim 5 wherein~~ the downlink network layer messages that comprise connection management messages ~~are~~ being first routed to the mobility management function.

8. (Currently amended). A method as in claim [[3]] 7 wherein network layer messages that comprise mobility management messages are first routed to the radio resource function.

9. (Currently amended). A method as in claim [[1]] 7 wherein the steps of examining a network layer message and routing the message directly to the respective functional layer are performed in a subsystem incorporating Base Transceiver System (BTS), Base Station Controller (BSC), and Mobile Switching Center Subsystems (MSC).

10. (Currently amended). A method as in claim [[1]] 7 wherein the steps of examining the network layer message and routing the message directly to the respective functional layer are performed in a mobile station (MS).

11. (Canceled).

12. (Currently amended). A computer readable medium as in claim [[11]] 17 wherein the functions of examining and routing the message are performed within a network layer thread as the message is first received by the network layer.

13. (Currently amended). A computer readable medium as in claim [[11]] 17 wherein the functions of examining and routing the message are performed within a lower layer thread as the message is passed up to the network layer by the lower layer.

14. (Canceled).

15. (Canceled).

16. (Currently amended). A computer readable medium as in claim [[15]] 17 additionally comprising the function of directly routing network layer messages that do not require acknowledgment.

17. (Currently amended). A computer readable medium having computer readable program codes embodied therein for causing a computer to function as a network layer message multiplexer, the network layer including within it certain functional layers, including a radio resource function, a mobility management function, and a connection management function with at least the radio resource function being normally assumed to be a transport mechanism for the mobility management and connection management functions, the computer readable medium program codes performing functions comprising:

examining a network layer message traveling in an uplink direction from a mobile station towards network subsystem components to determine, prior to routing it to any functional layer, whether it is associated with connection management, mobility management, or radio resource management;

routing the message directly to the respective connection management, mobility management, or radio resource management functional layer, without passing the message through each of the functional layers; and

processing downlink network layer messages traveling in a downlink direction from network subsystem components towards the mobile station in a direct manner such

that the network layer messages do not pass through other layer protocol stacks, ~~as in claim 15 wherein~~ the downlink network layer messages that comprise connection management messages ~~are~~ being first routed to the mobility management function.

18. (Currently amended). A computer readable medium as in claim [[13]] 17 wherein network layer messages that comprise mobility management messages are first routed to the radio resource function.

19. (Currently amended). A computer readable medium as in claim [[11]] 17 wherein the functions of examining a network layer message and routing the message directly to the respective functional layer are performed in a subsystem incorporating Base Transceiver System (BTS), Base Station Controller (BSC), and Mobile Switching Center Subsystems (MSC).

20. (Currently amended). A computer readable medium as in claim [[11]] 17 wherein the functions of examining the network layer message and routing the message directly to the respective functional layer are performed in a mobile station (MS).

21. (Previously presented). A network layer messaging multiplexer apparatus that processes network layer messages within a wireless communication system, the network layer including within it certain functional layers, including a radio resource function, a mobility management function, and a connection management function with at least the radio resource function being normally assumed to be a transport mechanism for the mobility management and connection management functions with a data link layer, the apparatus comprising:

a first interface that enables the routing of network layer messages to said radio resource functional layer;

a second interface that enables the routing of network layer messages to said mobility management functional layer;

a third interface that enables the routing of network layer messages to said connection management functional layer;

a fourth interface that enables the routing of network layer messages from said data link layer; and

a multiplexer function that examines a network message to determine, prior to routing it to any functional layer, whether it is associated with connection management, mobility management, or radio resource management and routs the message directly to the respective connection management, mobility management, or radio resource management functional layer, without passing the message through each of the functional layers.

22. (Canceled).

23. (Canceled).

24. (Currently amended). A system as in claim [[23]] 29 wherein the means for examining and routing the message are performed within a network layer thread as the message is first received by the network layer.

25. (Currently amended). A system as in claim [[23]] 29 wherein the means for examining and routing the message are performed within a lower layer thread as the message is passed up to the network layer by the lower layer.

26. (Canceled).

27. (Canceled).

28. (Currently amended). A system as in claim [[27]] 29 additionally comprising the means for directly routing network layer messages that do not require acknowledgment.

29. (Currently amended). A wireless communications system with messaging and other functionalities defined by a layered protocol, the system comprising:

a physical layer;

a data link layer that packages data from the physical layer for routing;

a network layer that routes a message containing the packaged data from the data link layer to a recipient, the network layer including within it certain functional layers, including a radio resource function, a mobility management function, and a connection management function with at least the radio resource function being normally assumed to be a transport mechanism for the mobility management and connection management functions;

a means for examining a network layer message traveling in an uplink direction from a mobile station towards network subsystem components to determine, prior to routing it to any functional layer, whether it is associated with connection management, mobility management, or radio resource management;

a means for routing the message directly to the respective connection management, mobility management, or radio resource management functional layer, without passing the message through each of the functional layers; and

a means for processing downlink network layer messages traveling in a downlink direction from network subsystem components towards the mobile station in a direct manner such that the network layer messages do not pass through other layer protocol stacks, ~~as in claim 27 wherein~~ the downlink network layer messages that comprise connection management messages ~~are~~ being first routed to the mobility management function.

30. (Currently amended). A system as in claim [[25]] 29 wherein network layer messages that comprise mobility management messages are first routed to the radio resource function.

31. (Currently amended). A system as in claim [[23]] 29 wherein the means for examining a network layer message and routing the message directly to the respective functional layer

are performed in a subsystem incorporating Base Transceiver System (BTS), Base Station Controller (BSC), and Mobile Switching Center Subsystems (MSC).

32. (Currently amended). A system as in claim [[23]] 29 wherein the means for examining the network layer message and routing the message directly to the respective functional layer are performed in a mobile station (MS).

33. (New). An apparatus as in claim 21 wherein the functions of examining and routing the message are performed within a network layer thread as the message is first received by the network layer.

34. (New). An apparatus as in claim 21 wherein the functions of examining and routing the message are performed within a lower layer thread as the message is passed up to the network layer by the lower layer.

35. (New). An apparatus as in claim 21 additionally comprising the function of directly routing network layer messages that do not require acknowledgment.

36. (New). An apparatus as in claim 21 wherein network layer messages that comprise mobility management messages are first routed to the radio resource function.

37. (New). An apparatus as in claim 21 wherein the functions of examining a network layer message and routing the message directly to the respective functional layer are performed in a subsystem incorporating Base Transceiver System (BTS), Base Station Controller (BSC), and Mobile Switching Center Subsystems (MSC).

38. (New). An apparatus as in claim 21 wherein the functions of examining the network layer message and routing the message directly to the respective functional layer are performed in a mobile station (MS).

39. (New). A method for processing network layer messages within a wireless communication system using a multiplexer function, the network layer including within it certain functional layers, including a radio resource function, a mobility management function, and a connection management function with at least the radio resource function being normally assumed to be a transport mechanism for the mobility management and connection management functions with a data link layer, the method comprising the steps of:

routing network layer messages to said radio resource functional layer using a first interface;

routing network layer messages to said mobility management functional layer using a second interface;

routing network layer messages to said connection management functional layer using a third interface;

routing network layer messages from said data link layer using a fourth interface; and

examining a network message to determine, prior to routing it to any functional layer, whether it is associated with connection management, mobility management, or radio resource management and routing the message directly to the respective connection management, mobility management, or radio resource management functional layer, without passing the message through each of the functional layers.

40. (New). A method as in claim 39 wherein the steps of examining and routing the message are performed within a network layer thread as the message is first received by the network layer.

41. (New). A method as in claim 39 wherein the steps of examining and routing the message are performed within a lower layer thread as the message is passed up to the network layer by the lower layer.

42. (New). A method as in claim 39 additionally comprising the step of directly routing network layer messages that do not require acknowledgment.

43. (New). A method as in claim 39 wherein network layer messages that comprise mobility management messages are first routed to the radio resource function.

44. (New). A method as in claim 39 wherein the steps of examining a network layer message and routing the message directly to the respective functional layer are performed in a subsystem incorporating Base Transceiver System (BTS), Base Station Controller (BSC), and Mobile Switching Center Subsystems (MSC).

45. (New). A method as in claim 39 wherein the steps of examining the network layer message and routing the message directly to the respective functional layer are performed in a mobile station (MS).

46. (New). A computer readable medium having computer readable program codes embodied therein for causing a computer to function as a network layer message multiplexer, the network layer including within it certain functional layers, including a radio resource function, a mobility management function, and a connection management function with at least the radio resource function being normally assumed to be a transport mechanism for the mobility management and connection management functions with a data link layer, the computer readable medium program codes performing functions comprising:

routing network layer messages to said radio resource functional layer using a first interface;

routing network layer messages to said mobility management functional layer using a second interface;

routing network layer messages to said connection management functional layer using a third interface;

routing network layer messages from said data link layer using a fourth interface; and

examining a network message to determine, prior to routing it to any functional layer, whether it is associated with connection management, mobility management, or radio resource management and routing the message directly to the respective connection management, mobility management, or radio resource management functional layer, without passing the message through each of the functional layers.

47. (New). A computer readable medium as in claim 46 wherein the functions of examining and routing the message are performed within a network layer thread as the message is first received by the network layer.

48. (New). A computer readable medium as in claim 46 wherein the functions of examining and routing the message are performed within a lower layer thread as the message is passed up to the network layer by the lower layer.

49. (New). A computer readable medium as in claim 46 additionally comprising the function of directly routing network layer messages that do not require acknowledgment.

50. (New). A computer readable medium as in claim 46 wherein network layer messages that comprise mobility management messages are first routed to the radio resource function.

51. (New). A computer readable medium as in claim 46 wherein the functions of examining a network layer message and routing the message directly to the respective functional layer are performed in a subsystem incorporating Base Transceiver System (BTS), Base Station Controller (BSC), and Mobile Switching Center Subsystems (MSC).

52. (New). A computer readable medium as in claim 46 wherein the functions of examining the network layer message and routing the message directly to the respective functional layer are performed in a mobile station (MS).